



IPW

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Allen HOPPER et al.

Serial No.: 10/825,611

Examiner: Unassigned

Filed: April 16, 2004

Group Art Unit: 1626

Title: PHOSPHODIESTERASE 4 INHIBITORS

**INFORMATION DISCLOSURE STATEMENT  
UNDER 37 C.F.R. §§ 1.56, 1.97 AND 1.98**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

This information disclosure statement is made in accordance with 37 C.F.R. §§ 1.56, 1.97 and 1.98 as follows:

Timing and Fees

- ☒ Under 37 C.F.R. § 1.97(b), no fee or statement is required for filing this information disclosure statement is filed:
- ☐ within three months of the filing date of a national application other than a CPA under § 1.53(d);
  - ☐ within three months of the actual filing date of the national phase of a PCT application; OR
  - ☒ before the mailing of a first substantive office action (including after filing of an RCE).
- ☐ Under 37 C.F.R. § 1.97(c), this information disclosure statement is filed after the periods specified in 37 C.F.R. § 1.97(b), but before the mailing date of:
- ☐ a final rejection under 37 C.F.R. 1.113;

☐ termination of prosecution, e.g. Ex Parte Quayle, M.P.E.P. § 609(B)(2); OR

☐ a notice of allowance under 37 C.F.R. § 1.311; and

is accompanied by:

☐ the statement as specified in 37 C.F.R. § 1.97(e) set out below; OR

☐ a check covering the fee of \$180.00 under 37 C.F.R. § 1.17(p).

☐ Under 37 C.F.R. § 1.97(d), this information disclosure statement is filed after the mailing date of the following actions which have not been withdrawn:

☐ a final action under 37 C.F.R. § 1.113;

☐ termination of prosecution, e.g. Ex Parte Quayle, M.P.E.P. § 609(B)(2); OR

☐ a notice of allowance under 37 C.F.R. § 1.311;

AND is filed on or before payment of the issue fee; AND is accompanied by:

☐ the statement as specified in 37 C.F.R. § 1.97(e) as set forth below, and the fee of \$180.00 under 37 C.F.R. § 1.17(p).

Statements Under 37 C.F.R. 1.97(e)

☐ Each item of information contained in this information disclosure statement was a first cited in a communication from a foreign patent office in a counterpart foreign application having a mailing date not more than three months prior to the filing date of this information disclosure statement; or

☐ No item of information contained in this information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and to the knowledge of the undersigned attorney after making reasonable inquiry, no item of information contained in this information disclosure statement was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing date of the information disclosure statement.

Cited Materials

☐ Copies of materials listed but not attached were cited in benefit (35 U.S.C. § 120) ancestor application Serial No. \_\_\_\_\_, on Form 892 by the Examiner and/or Form 1449 by the applicant; see 37 C.F.R. § 1.98(d).

☐ Copies of materials listed were cited in an international search report dated \_\_\_\_\_.

- ☐ Copies of the materials listed are attached (except for U.S. patents).

Non-English Language References

- ☐ An English-language search report or equivalent paper from a foreign patent office is provided indicating the relevance of the cited reference(s).
- ☐ A foreign-language search report from a foreign patent office is provided, and pertinent parts are translated substantively below:

X = document of particular relevance when it is taken alone  
Y = document of particular relevance when it is combined with another such document  
A = document defining the general state of the art  
O = non-written disclosure  
P = intercalated document  
T = document cited to understand the theory or principle underlying the invention  
E = patent document which has the benefit of a date earlier than the filing date and which was published only on or after this filing date  
D = cited in the application  
L = cited for another reason  
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- ☐ Translation of other relevant information on foreign search report

Other Information

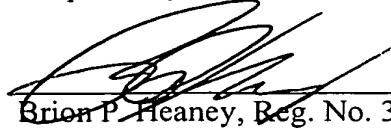
This application is related to Serial No. 10/825,610, filed April 16, 2004, and Serial No. 10/270,724, filed October 16, 2002. The documents cited in the prosecution of these two applications are listed on the attached PTO form-1449.

Payment of Fees Due (If Any):

- ☐ A check for \$\_\_\_\_\_ covering the fee identified above is attached.
- ☐ Please charge to Deposit Account No. 13-3402 \$\_\_\_\_\_ for the fee identified above.

☒ The Commissioner is hereby authorized to charge or credit any overpayment to Deposit Account #13-3402, two copies of this paper are attached for this purpose.

Respectfully submitted,

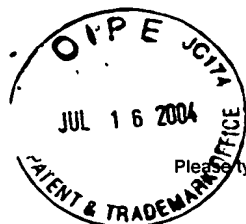


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Attorney Docket No.: MEMORY-41

Date: July 16, 2004



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Substitute for form 1449A/PTO

## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet 1 of 2

### Complete if Known

Application Number	10/825,611
Filing Date	April 16, 2004
First Named Inventor	Allen HOPPER
Group Art Unit	1626
Examiner Name	Unassigned
Attorney Docket Number	MEMORY-41

### U.S. PATENT DOCUMENTS

Examiner Initials *	Cite No. <sup>1</sup>	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code <sup>2</sup> (if known)			
	A1	4,012,495		Schmiechen, et al.	03-15-1977	
	A2	4,193,926		Schmiechen, et al.	03-18-1980	
	A3	4,219,551		Seidemann et al.	08-26-1980	
	A4	5,846,514		Foster et al.	12-08-1998	
	A5	5,539,111		Petzoldt, et al.	07-23-1996	
	A6	5,814,651		Duplantier, et al.	09-29-1998	
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	A10	6,372,777		Martins, et al.	04-16-2002	
	A11	6,334,997		Foster et al.	1-1-2002	
	A12	6,403,597		Wilson et al.	06-2002	
	A13	6,423,710		Martins, et al.	07-23-2002	
	A14	6,495,154		Tam, et al.	12-2002	

### FOREIGN PATENT DOCUMENTS

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		Office <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)				
	B1	WO	01/68600	A2	Lauener et al.	09-20-2001		
	B2	WO	02/45749	A2	Filbin et al.	06-13-2002		
	B3	WO	92/19594		Bender et al.	11-12-1992		
	B4	WO	93/07141	A1	Bender et al.	04-15-1993		
	B5	WO	93/25517	A1	Beeley et al.	12-23-1993		
	B6	WO	94/14742	A1	Warrellow et al.	07-07-1994		
	B7	WO	95/28926	A1	Wachtel et al.	11-02-1995		
	B8	WO	95/35282		Head et al.	12-28-1995		
	B9	WO	97/25312		Schmiechen, et al.	07-17-1997		
	B10	WO	98/58901	A1	Ina et al.	12-30-1998		Abstr.
	B11	JP	10-72415			3-17-1998		

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<sup>1</sup> Unique citation designation number. <sup>2</sup> See attached Kinds of U.S. Patent Documents. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

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		Examiner Name	Unassigned
Sheet 2 of 2	Attorney Docket Number	MEMORY-41	

**OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS**

Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	C1	Nagakura et al., "Effects of a phosphodiesterase IV inhibitor rolipram on microsphere embolism-induced defects in memory function and cerebral cyclic AMP signal transduction system in rats," <i>British Journal of Pharmacology</i> , (2002) 135, 1783-1793	
	C2	Keller et al., "Synthesis and Structure-Activity Relationship of N-Arylrolipram Derivatives as Inhibitors of PDE4 Isozymes," <i>Chem. Pharm. Bull.</i> , 49(8) 1009-1017 (2001)	
	C3	Martin, "PDE4 inhibitors - A review of the recent patent literature," <i>Idrugs</i> , 2001 4 (3):312-338	
	C4	Wang et al., "Expression, Purification, and Characterization of Human cAMP-Specific Phosphodiesterase (PDE4) Subtypes A, B, C, and D," <i>Biochemical and Biophysical Research Communications</i> , 234, 320-324 (1997)	
	C5	Meyers et al., "The Synthesis of Aracemic 4-Substituted Pyrrolidinones and 3-Substituted Pyrrolidines. An Asymmetric Synthesis of (-)-Rolipram," <i>J. Org. Chem.</i> , 1993, 58, 36-42	
	C6	Crossland, J., "Rolipram," <i>Drugs Of The Future</i> , Vol. 13, No. 1, 1988	
	C7	Langlois et al., "Synthesis of the Novel Antidepressant (R)-(-)-Rolipram," <i>Synthetic Communications</i> , 27 (18), 3133-3144 (1997)	
	C8	Robichaud et al., "Emesis induced by inhibitors of type IV cyclic nucleotide phosphodiesterase (PDE IV) in the ferret," <i>Neuropharmacology</i> , 38 (1999) 289-297	
	C9	Houslay et al., "The Multienzyme PDE4 Cyclic Adenosine Monophosphate-Specific Phosphodiesterase Family: Intracellular Targeting, Regulation, and Selective Inhibition by Compounds Exerting Anti-inflammatory and Antidepressant Actions," <i>Advance in Pharmacology</i> , Volume 44, pp. 225-342 (1998)	
	C10	Zhang et al., "Inhibition Of Cyclic AMP Phosphodiesterase (PDE4) Reverses Memory Deficits Associated with NMDA Receptor Antagonism," <i>Neuropsychopharmacology</i> , 2000, 23, 198-204	
	C11	Zhang et al., "Effects of rolipram on scopolamine-induced impairment of working and reference memory in the radial-arm maze tests in rats," <i>Psychopharmacology DOI</i> , 10.1007/s002130000414 (2000)	
	C12	Barad et al., "Rolipram, a type IV-specific phosphodiesterase inhibitor, facilitates the establishment of long-lasting long-term potentiation and improves memory," <i>Proc. Natl. Acad. Sci., USA</i> , Volume 95, pp. 15020-15025, December 1998	
	C13	Demnitz et al., "Enantiodivergent Synthesis of (R)- and (S)-Rolipram," <i>Molecules</i> , 1998, 3, 107-119	
	C14	Osby et al., "Rapid and Efficient Reduction of Aliphatic Nitro Compounds to Amines," <i>Tetrahedron Letters</i> , Volume 26, No. 52, pp. 6413-6416, 1985	
	C15	Kusters et al., "Influence of temperature on the enantioseparation of rolipram and structurally related racemates on Chiracel-OD," <i>Journal of Chromatography A</i> , 737, (1996) 333-337	
	C16	Christensen et al., "1,4-Cyclohexanecarboxylates: Potent and Selective Inhibitors of Phosphodiesterase 4 for the Treatment of Asthma," <i>J. Med. Chem.</i> , 1998, 41, 821-835	
	C17	Krause et al., "Pharmacokinetics of rolipram in the rhesus and cynomolgus monkeys, the rat and the rabbit. Studies on species differences," <i>Xenobiotica</i> , 1988, Vol. 18, No. 5, 561-571	
	C18	Lourenco et al., "Characterization of R-[ <sup>11</sup> C]rolipram for PET imaging for phosphodiesterase-4: <i>in vivo</i> binding, metabolism, and dosimetry studies in rats," <i>Nuclear Medicine and Biology</i> , 28 (2001) 347-358	
	C19	Egawa et al., "Rolipram and its optical isomers, phosphodiesterase 4 inhibitors, attenuated the scopolamine-induced impairments of learning and memory in rats," <i>Jpn J Pharmacol</i> , 1997 Nov, 75 (3): 275-81	
	C20	Schmiechen et al., "Close correlation between behavioural response and binding <i>in vivo</i> for inhibitors of the rolipram-sensitive phosphodiesterase," <i>Psychopharmacology</i> , (Berl) 1990; 102 (1): 17-20	
	C21	Marivet et al., "Inhibition of Cyclic Adenosine-3',5'-monophosphate Phosphodiesterase from Vascular Smooth Muscle by Rolipram Analogues," <i>J. Med. Chem.</i> , 1989, 32, 1450-1457	
	C22	Morgan et al., "Biochemical Pharmacology (1993)", 45(12), 2373-80, pgs 23-27, CAS Abstract Only,	

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